

THE IDENTITY OF THE RARER SCHISTOSOMES OF MAN AND THEIR INTERMEDIATE HOSTS

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It is remarkable that at least four distinct types of Schistosome ova should occur in the urine of Natal patients, when only one type is known from the Far East and only two from Egypt. If the spindle-shaped ova were merely a variety of the ova of the *Schistosomum haematobium*, one would have expected them to occur in Egypt and if, as is thought, one type is that of *Schistosomum bovis*, one would have expected it to be more common in North Africa, in view of the heavy infestation of Sardinian cattle with this parasite and the relative immunity of South African cattle to Schistosome invasion.

In South Africa very little has been reported of the adult schistosomes and there is always an element of uncertainty where the diagnosis rests solely on the appearance of the ova that are detected in the urine of a patient.

A small ovum which is occasionally present in the urine of Natal patients has been regarded as that of *S. haematobium*, but its outline is identical with that of *S. bomfordi* Montgomery. There is certainly need for further research into the identity of those schistosomes which attack man in Africa. The subject is complicated by the difficulty that has been experienced in determining the usual intermediate host of the rarer schistosomes and because of the difficulty that therefore arises in rearing the adult parasites from the miracidia which escape from the ova in infested persons. Fig. 1 shows four different schistosome ova isolated from the urine of Natal schoolboys, as well as that of *Schistosomum japonicum* from the Far East and of two schistosomes from India.

In South Africa it is only rarely that schistosomes are found in fresh-water snails other than *Physopsis africana*. I have found schistosomes in both *Isidora globosa* Morelet and *Planorbis pfeifferi* Krauss at Laurenço Marques. Various *Isidorae* occur in South Africa; they are very commonly infested with amphistome cercariae. *Limnaea natalensis* is the common host of *Fasciola gigantica*. *Melanoides tuberculata* Müller is the only species with an operculated shell that I have found infested with cercariae; but J. D. F. Gilchrist has isolated cercariae from *Tomichia ventriculosa* (Sowerby) Reeve. *Ancylidae* harbour cercariae of various kinds and *Burnupia gordonensis* M. & P. is one of the commonest and largest species of this genus in South Africa.

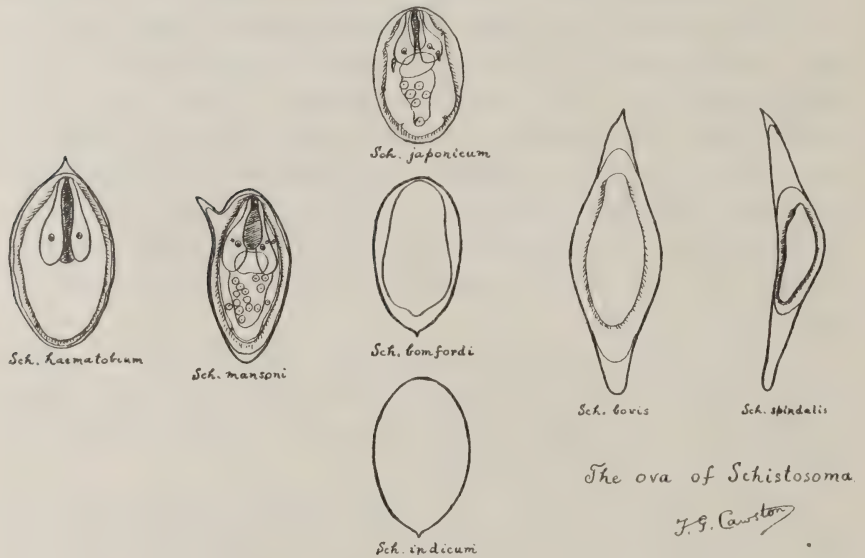


FIG. 1.

It is possible that a careful study of the radulae of intermediate hosts may assist in the determination of those species which resemble one another very closely. *Isidorae*, for instance, are notoriously variable and more than one species may occur in the same pool, each being represented by examples at various stages of growth. Although *Physae*, of which there are very few examples south of the Zambesi, might possibly be mistaken for *Isidorae* where the shell



FIG. 2. 1.—*Physopsis africana* Krauss; 2.—*Isidora globosa* Morelet; 3.—*Isidora craveni* Ancey; 4.—*Isidora tropica* Krauss; 5.—*Planorbis pfeifferi* Krauss; 6.—*Melanoides tuberculata* Müller; 7.—*Limnaea natalensis* Krauss; 8.—*Tiara coacta* Meusch; 9.—*Septaria tessellata* Lamarck; 10.—*Theodoxus natalensis* Reeve.

alone is set aside for study, there is little danger of this mistake being made where the individual teeth of the two genera are examined. Although there is a good deal of variation in the appearance of the teeth in individual examples of the same species, even when taken from the same locality and grown under apparently identical conditions, yet a careful study of the teeth reveals the fact that this variation is almost confined to the CONES which grow from the CROWN of the tooth, so that the variation is not so great as at first sight appears.